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Punishing factors for finitely connected domains

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Abstract

Let Ω and Π be two finitely connected hyperbolic domains in the complex plane $\mathbb{C}$ and let R(z, Ω) denote the hyperbolic radius of Ω at z and R(w, Π) the hyperbolic radius of Π at w. We consider functions f that are analytic in Ω and such that all values f(z) lie in the domain Π. This set of analytic functions is denoted by A(Ω, Π). We prove among other things that the quantities equation presented are finite for all $n \in \mathbb{N}$ if and only if ∂Ω and ∂Π do not contain isolated points.

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Keywords

Derivatives of arbitrary order, Hyperbolic radius, Schwarz-Pick Lemma